

CLAIMS

1. A cassette for a recording medium, comprising an upper casing and a lower casing, a spool for holding a roll of recording medium and disposed between the upper and lower casings, and a side casing for enclosing the spool and joining the upper and lower casings, wherein the side casing is fitted to at least one of the upper and lower casings by means of press-fit or snap-fit connections.
2. A cassette according to claim 1, wherein the upper and lower casings and the spool each have a substantially central through-hole which are substantially aligned as between the parts.
3. A cassette according to claim 2, further comprising a sprocket disposed in the through-hole of one of the upper and lower casings and dimensioned to extend into the through-hole in the spool for rotating the spool.
4. A cassette according to claim 3, wherein the sprocket is press-fitted or snap-fitted into the said spool.
5. A cassette according to claim 3 or claim 4, further comprising a plug disposed in the other of the said one of the upper and lower casings and dimensioned to extend into the through-hole in the spool.
6. A cassette according to any preceding claim, wherein the upper and lower casings comprise grooves and/or protrusions and the side casing comprises corresponding protrusions and/or grooves for effecting the press-fit or snap-fit connections.
7. A cassette according to any preceding claim, wherein the upper and lower casings and the side casing have a generally circular configuration, and comprise an exit area through which a recording medium disposed on the spool can exit.

8. A cassette according to claim 7, wherein the upper and lower casings each comprise a protrusion extending tangentially outwards from the generally circular configuration in the region of the exit area, through which recording medium passes when exiting the cassette.
9. A cassette according to claim 7 or claim 8 as dependent on claim 3, further comprising one or more leaf springs disposed in the exit area for preventing unwinding of a recording medium from the spool when the spool is not being rotated by the sprocket.
10. A cassette for a recording medium comprising an exit region for recording medium, and first and second flanges disposed at the exit region, each flange comprising one or more grooves adapted to receive an edge of a recording medium and allow the said edge to pass along the grooves.
11. A cassette for a recording medium according to claim 10, wherein the first and second flanges are disposed such that the first flange can receive a first edge of a recording medium and the second flange can receive a second edge opposite to the first edge of the recording medium.
12. A cassette for a recording medium according to claim 10 or claim 11, wherein the grooves are oriented parallel to one another.
13. A cassette for a recording medium according to any of claims 10 to 12, wherein each flange comprises first and second grooves disposed a distance apart, wherein the grooves are adapted to allow recording medium to pass into the first grooves, across the distance and into the second grooves.
14. A cassette for a recording medium according to any of claims 10 to 13, wherein the first flange extends from a first outer wall of the cassette and the second flange extends from a second outer wall of the cassette such that the flanges are adapted to guide recording medium out of the cassette at a position substantially equidistant from the first and second outer walls of the cassette.

15. A cassette for a recording medium according to claim 15, arranged to hold recording medium in a roll configuration, wherein the flanges are located such that an end of the recording medium can exit the cassette through the grooves as the recording medium unwinds from its roll configuration.

16. A cassette for a recording medium comprising a casing, wherein one region of the casing has a rib on its exterior surface, which rib is adapted to slide in a groove of a device in which the cassette can be inserted, the rib comprising a projection adapted to latch into a detent of a device in which the cassette can be inserted.

17. A cassette according to claim 16, wherein the rib is generally elongate.

18. A cassette according to claim 16 or claim 17, comprising upper and lower casings and wherein the rib is disposed on the exterior surface of one of the upper and lower casings.

19. A cassette according to claim 18, wherein the exterior surfaces of each of the upper and lower casings has one or more ribs disposed thereon.

20. A cassette according to any of claims 16 to 19, wherein the rib or ribs are moulded out of the exterior surface on which they are disposed.

21. A printing device having a recording medium receiving bay adapted to receive a recording medium cassette, wherein the receiving bay comprises a groove along which a rib of a recording medium cassette can be slid during insertion of the cassette into the recording medium receiving bay, the groove comprising a detent into which a projection of a rib of a recording medium cassette can be latched.

22. A printing device according to claim 21, wherein the groove is generally elongate.

23. A printing device according to claim 21 or claim 22, wherein the recording medium receiving bay comprises a cassette support in which the groove is disposed, the support being moveably resiliently mounted in the recording medium receiving bay to facilitate insertion of a recording medium cassette into the recording medium receiving bay.

24. A printing device according to claim 23, wherein the recording medium receiving bay further comprises a second cassette support, which support is moveably resiliently mounted in the recording medium receiving bay such that a recording medium cassette can be received in the recording medium receiving bay between the supports.

25. A printing device according to claim 24, further comprising a mechanism which is operable to allow separation of the supports for insertion of a recording medium cassette therebetween and is further operable to allow movement of the supports towards one another to retain an inserted recording medium cassette in a substantially fixed position with respect to the recording medium receiving bay.

26. A printing device according to claim 25, wherein the mechanism comprises a means for locking the supports in one or more fixed positions with respect to the recording medium receiving bay.

27. A printing device according to claim 25 or claim 26, wherein the mechanism comprises one or more springs and a gear arrangement arranged to move the supports towards one another a substantially equal distance with respect to the recording medium receiving bay.

28. A printing device according to any of claims 25 to 27, wherein the supports can be separated manually.

29. In combination a printing device according to any of claims 21 to 28, and a recording medium cassette according to any of claims 16-20, wherein the

said rib of the recording medium cassette is adapted to slide in a groove of a recording medium receiving bay of the printing device.

30. A printing device having a recording medium receiving bay adapted to receive a recording medium cassette, the receiving bay comprising first and second supports mounted in a moveably resiliently manner, the printing device further comprising a mechanism which is operable to allow separation of the supports for insertion of a recording medium cassette therebetween and is further operable to allow movement of the supports towards one another to retain an inserted recording medium cassette in a substantially fixed position with respect to the recording medium receiving bay.

31. A printing device according to claim 30, wherein the mechanism comprises a lever for locking the supports in one or more fixed positions with respect to the recording medium receiving bay.

32. A printing device according to claim 30 or claim 31, wherein the mechanism comprises one or more springs and a gear arrangement arranged to move the supports towards one another a substantially equal distance with respect to the recording medium receiving bay.

33. A printing device according to any of claims 30 to 32, wherein the supports can be separated manually.

34. A printing device adapted to receive a cassette therein, the printing device comprising one of a ramp means and a resiliently moveable portion capable of interacting with the other of a ramp means and a resiliently moveable portion of a cassette, such that during insertion of the cassette the ramp means causes movement of the resiliently moveable portion from a position in which it would otherwise prevent insertion of the cassette into a position allowing insertion of the cassette.

35. A printing device according to claim 34, wherein the printing device comprises the ramp means and further comprises a detent into which the resiliently moveable portion can latch following insertion of the cassette.
36. A printing device according to claim 35, wherein the detent is located such that when a resiliently moveable portion of a cassette has latched into the detent, the printing device is operable to print using the cassette.
37. A printing device according to claim 34, wherein the detent is configured such that the said resiliently moveable portion is moveable following insertion of a cassette into the printing device to allow removal of a cassette from the printing device.
38. A cassette adapted to be received in a printing device, the cassette comprising one of a ramp means and a resiliently moveable portion capable of interacting with the other of a ramp means and a resiliently moveable portion of a printing device, such that during insertion of the cassette the ramp means causes movement of the resiliently moveable portion from a position in which it would otherwise prevent insertion of the cassette into a position allowing insertion of the cassette.
39. A cassette according to claim 38, wherein the cassette comprises the ramp means and further comprises a detent into which the resiliently moveable portion can latch following insertion of the cassette.
40. A cassette according to claim 38, wherein the detent is configured such that the said resiliently moveable portion is further moveable following insertion of the cassette into a printing device to allow removal of the cassette from a printing device.
41. In combination a printing device and a cassette adapted to be received in the printing device, the printing device comprising a resiliently moveable portion capable of interacting with a ramp means of a cassette, such that during insertion of the cassette the ramp means causes movement of the

resiliently moveable portion from a position in which it would otherwise prevent insertion of the cassette into a position allowing insertion of the cassette.

42. A combination according to claim 41, wherein the cassette further comprises a detent into which the resiliently moveable portion can latch following insertion of the cassette.

43. A combination according to claim 41 or claim 42, wherein the detent is configured such that the said resiliently moveable portion is moveable following insertion of the cassette into the printing device to allow removal of the cassette from the printing device.

44. A cassette comprising a hollow spool for holding a recording medium, and a sprocket disposed inside at least a part of the spool and driveable to rotate the spool for unwinding recording medium therefrom, wherein a surface of the sprocket in contact with an interior surface of the spool comprises a plurality of protrusions which bear on the inside surface of the spool.

45. A cassette according to claim 44, wherein the spool is made of compressible material and the plurality of protrusions cause local deformation of the material.

46. A cassette according to claim 44 or claim 45, wherein the protrusions have a serrated profile to bear on the interior surface of the spool.

47. A cassette according to any of claims 44 to 46, wherein the protrusions comprise a plurality of triangular ribs disposed around the said surface of the sprocket.

48. A printer comprising a cassette receiving bay for receiving a cassette holding recording medium, the cassette receiving bay comprising a sprung portion which is openable to allow insertion of a cassette in the receiving bay

and which is arranged to, following insertion of a cassette, close under a spring force, thereby locking an inserted cassette in the receiving bay.

49. A printer according to claim 48, wherein the sprung portion is arranged to open and close in a plane perpendicular to the direction of insertion of a cassette.

50. A printer according to claim 49, wherein the sprung portion is of cylindrical form and is arranged to open and close in a direction about its central axis.

51. A printer according to any of claims 48 to 50, wherein the cassette receiving bay further comprises a fixed portion, and wherein when the sprung portion is open, the sprung portion and the fixed portion together form one or more grooves through which a corresponding one or more ribs of a cassette can slide during insertion, thereby retaining the sprung portion in an open position during insertion of a cassette.

52. A printer according to claim 51, wherein the sprung portion comprises an abutment portion arranged to, when the sprung portion is closed, prevent movement of an inserted cassette in a direction opposite to the direction of insertion by being disposed to foul with an end of a rib of a cassette.

53. A printer according to any of claims 48 to 52, further comprising a roller drive means disposed in a region in which recording medium exits a cassette inserted in the cassette receiving bay, wherein the sprung portion is further arranged to, upon closing under the said spring force, cause movement of the roller means from a position in which a cassette can be inserted towards a position in which it will contact recording medium as the recording medium exits an inserted cassette.

54. A printer according to claim 53, wherein the sprung portion is arranged to cause sufficient movement of the roller drive means that it moves into the said



position in which it will contact recording medium as the recording medium exits an inserted cassette.

55. A printer according to claim 53, further comprising a lever means operable to move the roller drive means from the position to which it has been moved by closure of the sprung portion to the said position in which it will contact recording medium as the recording medium exits an inserted cassette.

56. A printer according to claim 55, wherein the lever means is a door which moves the roller drive means when closed over the cassette receiving bay.

57. A printer according to any of claims 53 to 56, wherein the roller drive means is rotatably mounted and thereby moveable between the various positions by rotation.

58. A cassette for use with a printer, the cassette comprising one or more ribs on an outside surface of the cassette, at least one of the ribs being substantially channel-shaped, wherein at least one of the legs of the channel-shape is disposed at an angle of greater than 90° to the base of the channel-shape.

59. A cassette according to claim 58 intended for insertion into a printer in a direction inserting the base of the channel-shape before the legs of the channel-shape.

60. A cassette according to claim 58 or claim 59, wherein one of the legs is shorter than the other leg.

61. A cassette according to claim 60, wherein the said other leg extends substantially across the width of the outer surface of the cassette on which the rib is disposed.

62. In combination a printer and a cassette, the printer comprising a cassette receiving bay for receiving the cassette, the cassette receiving bay comprising

a fixed portion and a sprung portion which is openable to allow insertion of the cassette in the receiving bay and which is arranged to, following insertion of the cassette, close under a spring force, thereby locking the inserted cassette in the receiving bay, wherein when the sprung portion is open, the sprung portion and the fixed portion together form one or more grooves through which a corresponding one or more ribs of the cassette can slide during insertion, thereby retaining the sprung portion in an open position during insertion.

63. A combination according to claim 62, wherein at least one of the ribs of the cassette is substantially channel-shaped and at least one of the legs of the channel-shape is disposed at an angle of greater than  $90^\circ$  to the base of the channel-shape, thus facilitating a smooth insertion of the cassette in a direction inserting the base of the channel-shape before the legs of the channel-shape.

64. A combination according to claim 63, wherein one of the legs is shorter than the other leg and the said one of the legs is arranged to, following insertion of the cassette into the cassette receiving bay, abut on a portion of the sprung portion of the cassette receiving bay, thereby retaining the cassette in the cassette receiving bay.

65. A combination according to any of claims 62 to 64, wherein at least one other of the said ribs is elongate and is arranged to slide through a corresponding elongate groove formed by the sprung portion and the fixed portion, thus maintaining the cassette in a correct position for insertion with respect to a direction perpendicular to the length of the rib.

66. A recording medium cassette comprising a casing and having a wound roll of recording medium disposed in the casing which roll can unwind such that an end of the recording medium can exit the casing, wherein the cassette further comprises a leaf spring disposed on the casing and oriented to act on the recording medium to exert a force in a direction towards the centre of the roll of recording medium.

67. A recording medium cassette according to claim 66, wherein the recording medium is wound on a spool and the said force acts in a direction towards the spool.

68. A recording medium cassette according to claim 66 or claim 67, wherein the leaf spring exerts a further force in a direction tangentially along the recording medium at the point where the spring contacts the recording medium.

69. A recording medium cassette according to any of claims 66 to 68, wherein the leaf spring has an attachment portion attaching the leaf spring to the casing, and a curved portion projecting from the attachment portion towards the recording medium.

70. A recording medium cassette according to claim 69, wherein the casing comprises a protrusion over which the said attachment portion of the leaf spring is fitted.

71. A recording medium cassette according to claim 69 or claim 70, wherein the casing comprises upper and lower portions, the roll of recording medium being disposed between the upper and lower portions to unwind in a direction parallel to the plane of the upper and lower portions, and wherein the attachment portion of the leaf spring is attached to one of the upper and lower portions.

72. A recording medium cassette according to any of claims 66 to 71, comprising a further leaf spring disposed on the casing and oriented to act on the recording medium to exert a force in a direction towards the centre of the roll of recording medium.

73. A recording medium cassette according to claim 72, wherein the said leaf spring is disposed to act towards one edge of the recording medium and the

said further leaf spring is disposed to act towards the other edge of the recording medium.

74. A recording medium cassette according to claim 73, as dependent on claim 71, wherein one leaf spring is attached to the upper portion of the casing and the other leaf spring is attached to the lower portion of the casing.

75. A set of cassettes for holding a recording medium, each cassette comprising an upper portion and a lower portion disposed apart a distance and joined together by attachment to a side portion having a width corresponding to the distance, thereby enabling a roll of recording medium to be held between the upper and lower portions with the width of the recording medium being oriented substantially parallel to the width of the side portion, wherein each cassette has a side portion of a different width.

76. A set of cassettes according to claim 75, wherein any of the side portions can be fitted to the upper and lower portions of any of the cassettes.

77. A set of cassettes according to claim 76, wherein the side portions have identical fittings for attachment to the upper and lower portions.

78. A set of cassettes according to any of claims 75 to 77, wherein the upper and lower portions of each cassette have identical fittings for attachment to a side portion to those of the upper and lower portions respectively of every other cassette.

79. A set of cassettes according to any of claims 75 to 78, wherein the upper and lower portions of a cassette are attached to a side portion by a press-fit or snap-fit connection.

80. A set of cassettes according to any of claims 75 to 79, each holding a roll of recording medium having a width corresponding to the width of the side portion of its respective cassette.

81. A set of cassettes according to claim 80, wherein the width of the recording medium is slightly less than the width of the side portion of its respective cassette.

82. A set of cassettes according to any of claims 75 to 81, manufactured by using an injection mould adjusted in dependence on the width of the side portion.

83. A set of cassettes according to claim 82, wherein the injection mould is adjusted by positioning of an ejector plate in the mould for moulding of the side portion.

84. A printer for use with a cassette holding recording medium, the printer comprising :

driving means able to drive in a forward direction to unwind recording medium of a cassette inserted in the printer and to drive in a reverse direction for rewinding recording medium;

detection means for detecting that an inserted cassette is to be removed from the printer and, when such a detection is made, generating a signal indicating that a cassette is to be removed,

wherein the driving means is arranged to receive the generated signal and in response thereto, drive in the reverse direction for rewinding a length of recording medium of an inserted cassette.

85. A printer according to claim 84, further comprising means for a user to enter an indication that a cassette is to be removed from the printer, wherein the detection means is arranged to detect the said indication.

86. A printer according to claim 84 or claim 85, having a cutting region at which a portion of printed recording medium is cut, wherein the driving means is arranged to drive in the reverse direction for rewinding a length of recording medium of an inserted cassette an amount corresponding to a distance or less than the distance between the cutting region and a position where recording medium exits an inserted cassette.

87. A printer according to claim 86, having a printing region at which an image is printed on recording medium of an inserted cassette, wherein the driving means is arranged to drive in the reverse direction for rewinding a length of recording medium of an inserted cassette an amount corresponding to a distance or greater than the distance between the printing region and a position where recording medium exits an inserted cassette.

88. A printer for use with a cassette holding recording medium, the printer comprising :

a printing zone comprising a platen and a print means arranged to receive therebetween recording medium held in a cassette inserted in the printer, to thereby print an image on a length of the recording medium, the platen being rotatable to drive a length of recording medium through the printing zone; and

driving means comprising a feed roller arranged to rotate to thereby unwind recording medium held in an inserted cassette to thereby feed recording medium to the printing zone,

wherein the printer is arranged to, when a length of recording medium unwound by the driving means reaches the printing zone, rotate the platen to drive the length of recording medium through the printing zone.

89. A printer according to claim 88, comprising a timer arranged to cause the platen to start rotating at a predetermined time after the feed roller of the driving means starts to rotate.

90. A printer according to claim 88, comprising a sensor located in the printing zone and arranged to detect when a length of image receiving tape is in the region of the platen, and upon such detection, generate a signal to cause rotation of the platen.

91. A printer according to claim 90, wherein the sensor is arranged to detect when the leading edge of a recording medium has reached a predetermined distance before the platen.

92. A printer according to any of claims 88 to 91, wherein the feed roller of the driving means is arranged to stop rotating upon commencement of rotation of the platen.

93. A printer comprising :

- a cassette receiving bay for receiving a cassette holding recording medium;

- a roller drive means disposed in a region in which recording medium exits a cassette inserted in the cassette receiving bay; and

- a lever means operable to move the roller drive means from a position in which a cassette can be inserted to a position in which it will contact recording medium as the recording medium exits an inserted cassette.

94. A printer according to claim 93, wherein the lever means is a door which moves the roller drive means when closed over the cassette receiving bay.

95. A printer according to claim 93 to 94, wherein the roller drive means is rotatably mounted and thereby moveable between the two positions by rotation.

96. An ink ribbon cassette comprising :

- a supply spool for holding a roll of ink ribbon;

- a take-up spool onto which ink ribbon unwound from the supply spool is wound;

- a driveable sprocket arranged to rotate the supply spool for rewinding unwound ribbon onto the supply spool; and

- a spring disposed to act axially on the sprocket for maintaining tension of the ink ribbon between the supply and take-up spools.

97. An ink ribbon cassette according to claim 96, further comprising :

- a second driveable sprocket arranged to rotate the take-up spool; and

a second spring disposed to act axially on the second sprocket for assisting in maintaining tension of the ink ribbon between the supply and take-up spools.

98. An ink ribbon cassette according to claim 96 or claim 97, wherein the spring and second spring are coil springs.

99. An ink ribbon cassette according to any of claims 96 to 98, wherein the spring and second spring bear on an end face of the sprocket.

100. An ink ribbon cassette according to any of claims 96 to 99, wherein the opposite end of the spring and second spring to that which acts on the respective sprockets bears on an interior wall of the cassette.

101. An ink ribbon cassette according to claim 99, wherein the said interior wall is formed with a respective planar portion onto which each of the springs bears.

102. An ink ribbon cassette according to any of claims 96 to 101, wherein the sprocket comprises an end portion on which the respective spring bears, the end portion being formed of an inner cylinder on which the spring bears and an outer cylinder, the inner cylinder extending further outwards in the direction of the spring than the outer cylinder.

103. An ink ribbon cassette according to claim 96 further comprising a second driveable sprocket arranged to rotate the take-up spool, wherein the said spring further acts axially on the second sprocket for assisting in maintaining tension of the ink ribbon between the supply and take-up spools.

104. An ink ribbon cassette according to claim 103, wherein the spring is an elongate leaf spring.

105. An ink ribbon cassette according to claim 103 or claim 104, further comprising a rib or ribs on which the sprockets bear.



106. An ink ribbon cassette comprising :

a hollow supply spool for holding a roll of ink ribbon; and

a driveable sprocket at least part of which is disposed inside the supply spool to rotate the supply spool for rewinding unwound ribbon onto the supply spool,

wherein the end of the sprocket that is not disposed inside the supply spool comprises an inner cylinder and an outer cylinder, the inner cylinder extending further in a direction away from the supply spool than the outer cylinder.

107. An ink ribbon cassette according to claim 106, further comprising :

a hollow take-up spool for taking up ribbon unwound from the supply spool; and

a driveable sprocket at least part of which is disposed inside the take-up spool to rotate the take-up spool,

wherein the end of the sprocket that is not disposed inside the take-up spool comprises an inner cylinder and an outer cylinder, the inner cylinder extending further in a direction away from the take-up spool than the outer cylinder.

108. An ink ribbon cassette according to claim 106 or claim 107, further comprising a bearing surface onto which the or each outer cylinder bears.

109. An ink ribbon cassette according to claim 108, wherein the said bearing surface comprises one or more ribs.